

**A NEW GENUS AND SPECIES OF PUTATIVELY  
MYRMECOPHILOUS PTININE: *COLEOAETHES  
TETRALOBUS* (COLEOPTERA: ANOBIIDAE: PTININAE)<sup>1</sup>**

T. KEITH PHILIPS

Department of Entomology, Museum of Biological Diversity,  
Ohio State University, 1315 Kinnear Rd., Columbus, OH 43212

*Abstract.*—*Coleoaethes tetralobus* NEW GENUS, NEW SPECIES, from Panama, is described. It is the third myrmecophilous genus of ptinine known from the New World. It is characterized by four lobes near the elytral apices, each with patches of brush like setae or trichomes. The relationship of *Coleoaethes tetralobus* to other ptinines, its morphological features associated with myrmecophily, and the diversity and distribution of myrmecophilous ptinines are briefly discussed.

*Key Words.*—Ptininae, Anobiidae, myrmecophily, spider beetle, Panama, trichomes.

Myrmecophilous ptinines are some of the most unusual and bizarre appearing Coleoptera. The 43 described species exhibit highly modified anatomies including body protuberances and invaginations, trichomes, variously modified legs, antennae, and mouthparts. Of the eight genera of ant-associated ptinines, six are limited to the Old World: the relatively speciose groups *Diplocotes* Westwood, *Polyplocotes* Westwood, *Ectrephes* Pascoe, and *Enasiba* Olliff in Australia; the monotypic *Myrmecoptinus* Wasmann from Southeast Asia; and *Diplocotidus* Peringuey from South Africa (Lawrence & Reichardt 1969). The New World genera *Gnostus* Westwood and *Fabrasia* Martínez and Viana have three and four species respectively (Lawrence & Reichardt 1966, Philips 1997).

Both New World genera are very structurally distinct. *Fabrasia* is characterized by a transverse row of large pores located at the middle of each elytron and trichomes situated on the apices of enlarged hind femora. *Gnostus* has trichomes situated near the pronotal base close to the lateral edge on posterior and anterior facing processes and three segmented antennae. Phylogenetic analysis (TKP, unpublished data) has revealed a third New World lineage no less unique, which I take this opportunity to name.

*COLEOAETHES* PHILIPS, NEW GENUS

*Type species.*—*Coleoaethes tetralobus* Philips, NEW SPECIES

*Description.*—Form elongate, convex; at midpoint in cross section ovoid, slightly broader than high; integument shining, with scattered erect, suberect, and recumbent setae not obscuring surface. Head strongly declined, visible from above including the short neck behind eyes; vertex slightly convex; clypeus and frons fused, strongly expanded anteriorly in front of eyes, in frontal view roughly triangular in shape, slightly emarginate at labral union; labrum small, in frontal view width about one-fourth the minimum width between eyes, anterior margin broadly rounded; laterally frons with broad shallow groove extending from between eye and ventral edge of antennal insertion to near dorsal mandibular insertion, gena expanded laterally, maximally at posterior margin of eye; maxillary, labial palp reduced in length, tip of apical maxillary palpomere truncate to slightly emarginate; mandible strongly curved externally, strongly concave on inner surface; mentum platelike, apex truncate, separated from the remaining labial body, projecting ventrally, slightly anteriorly; antennae with 11 dis-

<sup>1</sup> Page charges partially offset by a grant from the C.P. Alexander fund.

tinctly moniliform antennomeres. Pronotum slightly transverse, constricted at anterior one-fourth, sides rounded, setal tufts weak or absent; scutellum large, broadly triangular, rounded at apex. Elytra about  $3.4 \times$  as long as pronotum, each elytron slightly narrower than width of pronotum; elytra very slightly increasing in width to apical two-fifths, then tapering to apex, apices slightly, irregularly truncate, humeral angles pronounced, elytral base sinuate; an oblique carina from humeral angle to suture forming a distinct lobe near elytral apex, another larger lobe directly posterior to this and closer to elytral apex, both lobes with small patches of brush-like setae at or near apices; hind wings fully developed. Prosternum short in front of procoxae, prosternal process very short, barely extending between coxae and not extending ventrally; procoxae conical, strongly projecting, contiguous; prosternal-pronotal suture indistinct; mesosternum subequal in length to prosternum, mesosternal process narrow, approximately one-eighth width of mesocoxa, extending posteriorly approximately one-half length of mesocoxa, mesocoxae about the same size as procoxae, not as strongly projecting; mesosternal-mesepisternal suture distinct; metasternum nearly  $2 \times$  as long as mesosternum,  $2 \times$  as wide as long, sharply declivous at posterior margin between metacoxae, median dark line present indicating base of metepisternum but without an associated distinct sulcus; metacoxae separated at middle by a distance equal to about two-third length of first ventrite, transverse, broadly triangular, lateral edge contacting elytron, slightly concave distad of trochanter insertion. Abdomen length slightly longer than width, most strongly convex anteriorly, ventrites 4 and 5 flat at middle, ventrite 2 longer than 1 and 3, 1 and 3 nearly equal, 4 greatly reduced, about one-half length of 3. Legs long, not clavate, widest at or before middle, tarsomere 1 on all legs about  $2 \times$  as long as 2; large spine on apex of mesotibia; tarsomeres 1-4 (on pro-, mesotarsi), tarsomeres 2-4 (on metatarsi) with dense short setae ventrally forming a pad.

*Diagnosis.*—Superficially similar in dorsal habitus to *Ptinus*, this genus is recognizable by each elytron with two expanded lobes near the apex, separated by a deep transverse cleft. The antennae are moniliform, especially the sixth through tenth antennomeres, and the fronto-clypeal region is protuberant.

*Etymology.*—Derived from the greek words “coleo” (sheath) and “aethes” (unusual or strange) in reference to the unique modification of the elytra.

*Discussion.*—*Coleoaethes* is one of the more basal taxa of ptinines. This genus shares with other bostrichoids a number of character states not found in most other ptinines (Philips unpublished), such as relatively parallel-sided, instead of clavate, femora. *Coleoaethes* also has contiguous and strongly projecting procoxae, a reduced prosternal process with an unexpanded apex, an anteriorly truncate and non-grooved mentum, a distinct fronto-clypeal suture, and lacks a basal pronotal constriction, as in non-ptinine Anobiidae (i.e., Anobiidae, sensu stricto).

*COLEOAETHES TETRALOBUS* PHILIPS, NEW SPECIES  
(Figures 1-4)

*Types.*—Holotype male, PANAMA. PANAMA PROVINCE: Altos de Majé, Oct 6/15 1975, D. S. Chandler, beating; deposited: The Ohio State University Collection, Columbus. Paratype male, same data as holotype except beating in forest, deposited in the collection of the author.

*Description.*—*Male.*—Length 2.37–2.57 mm ( $n = 2$ ); integument light chestnut or red-brown, shining, covered with short, yellow, mainly erect and recumbent scattered setae. Head covered with scattered erect and suberect setae of various lengths, the longest equal to width of one eye; texture on head finely granulate, coarser on vertex, less so on labrum; genae and vertex with small, scattered setose granulations; very slightly carinate above antennal insertions, carinae quickly becoming obsolete dorso-laterally; slight longitudinal depression at middle between tumid region posterior of antennal insertions, swelling not continuing posterior of hind margin of eye; interantennal space broadly rounded, antennal fossae posteriorly at most only very slightly carinate; eye with margins slightly concave dorsally and ventrally, 13 ommatidia dorso-ventrally and nine antero-posteriorly; antennae moniliform, especially antennomeres 6–10, apical antennomere about  $1.5 \times$  as long as 10, scape elongate



Figures 1–4. External morphology of *Coleoaethes tetralobus*. Figure 1. Dorsal habitus. Figure 2. Oblique view of elytral apices showing the location of the four apical lobes with trichomes. Figure 3. Lateral view. Figure 4. Front of head showing the expanded fronto-clypeal region and the strongly projected front coxae.

oval. Pronotum covered with scattered recumbent or suberect setae of moderate length, each originating from a small tubercle, setae forming a pattern similar to concentric rings dorso-laterally which, at most, form very weak setal tufts at the lateral declivity; surface between tubercles very finely granulate; strong narrow anterior constriction laterally at anterior one fourth. Elytral surface fairly smooth with broad, very shallow depressions or punctures, indicated by irregularly shaped but usually rounded translucent areas, these areas variable in both size and spacing but approximately aligned in longitudinal rows, although more numerous and irregular in shape laterally; translucent areas absent from near lateral edge which appears as a longitudinal opaque band about as wide or slightly narrower than antennomere width, and absent from apical lobes; humeral angles well pronounced, extending anteriorly beyond posterior margin of pronotum; large carina extending posteriorly obliquely from humeral angle to near elytral apex, becoming more pronounced posteriorly, at apical one-fifth curving

sharply toward elytral suture and forming posterior margin of anterior lobe, apex of lobe deeply, smoothly, transversely emarginate, upper margin gradually rounded and pointed, lower margin larger more broadly rounded, darker, with sharper edge, truncate when viewed from above; larger posterior lobe, opposite this bifurcate anterior lobe, originating from near elytral apex with posterior surface slightly concave, rising almost vertically and slightly anteriorly to a point below the anterior lobe, margin of posterior lobe truncate, sharp, discontinuous at lateral declivity with each end both narrowly overlapping and separate, inner surface concave; anterior lobe with long setae located on upper edge and within cavity created by emargination, lower edge with a narrow medial patch of short brush-like setae, posterior lobe with similar short setae arising between discontinuous margins, continuing laterad along anterior edge of lobe down through to base; cleft between anterior and posterior lobes deep, narrow near suture, more open laterally; long setal fringes located on elytral margin near suture; elytral setae of two main types: long erect setae roughly arranged in longitudinal rows between translucent spots on the elytra, each seta about as long as one of antennomeres 2–10, becoming shorter close to lateral margin; also sparsely covered with recumbent or depressed setae averaging one-third to one-half the length of erect setae and more randomly scattered. Ventral surface with scattered, fine, recumbent and appressed setae; metasternal surface slightly more granulate laterally, sternal and ventrite surface with fine scattered punctures; abdomen length about 1.15 times width, ventrite ratio (1–5): 23: 25: 20: 9: 41. Legs with scattered erect, suberect and recumbent setae of various lengths; large, gently curved spine on apex of mesotibia, about equal to length of first tarsomere. Male genitalia with parameres and median lobe very elongate and narrow, median lobe slightly expanded near apex, parameres gradually tapering to apices, each apex with a small tuft of long setae (genitalia not dissected but partially visible).

*Female*.—Unknown.

*Diagnosis*.—This species is recognizable by the modified elytral apices with four expanded lobes near the suture. The anterior lobe on each elytron is transversely emarginate and consists of a small dorsal lobe with a patch of elongate setae and a larger, more sharp edged, ventral lobe with a small fringe of brush-like setae. Posterior to the anterior lobe and separated from it by a deep cleft is the posterior lobe which also has a brush-like fringe of setae. Also characteristic are the strongly moniliform antennae, especially on antennomeres six through ten, and the strongly inflated fronto-clypeal region.

*Distribution*.—Known only from the type locality in Panama.

*Etymology*.—The specific name is derived from the greek words “tetra” and “lobus,” in reference to the four elytral lobes (with trichomes) near the elytral apices.

*Discussion*.—Trichomes (i.e., modified hairs associated with glands which produce secretions attractive to ants) are known in many groups of Coleoptera, but their location on elytra are reported only in some clavigerine pselaphids, the aphodiine scarab genus *Chaetopisthes* (on the tips of the elytra), and the carabid genus *Paussus* (on the sides of the elytra) (Wilson 1971). This is the first example, in the myrmecophilous ptinines, of trichomes on the elytra. Other ptinines have trichomes positioned on either the pronotum or femora. The elytral trichomes on species of pselaphids (*Adranes taylori* Wickham and *Claviger testaceus* Preysslner) have epidermal gland cells within the elytra (Cammaerts 1974, Hill et al. 1976) which probably “service” the setal tufts. Glandular cells within the elytra of *C. tetralobus* may have a similar function.

In *C. tetralobus*, the lobes bearing the trichomes are in adjacent pairs on each elytron, with the anterior and posterior lobes narrowly separated and with their apices converging. Lawrence and Reichardt (1969) surmised that this lobe position and shape may be a way to collect a drop of glandular liquid. Another feature which may improve the fluid holding capacity in *C. tetralobus* is the concave



inner surface of the posterior lobe. Other glandular associated structures, such as elytral pores and antennal pilosity found in other myrmecophilous ptinines, are not present in *C. tetralobus*.

One unusual feature in *Coleoaethes* is the plate-like mentum which is attached to the labium basally and projects anteriorly and distally. It may function to assist in protecting mouthparts. A similar ventral projection of the mentum can be seen in the ptinine *Enasiba tristis* Olliff, but the mentum in this species is not plate-like and is more robust. *Coleoaethes tetralobus* and some other myrmecophilous ptinines have an anteriorly expanded fronto-clypeus. The function of this protuberance is unknown but, similar to the mentum, this structure may have evolved to protect mouthparts.

Nothing is known of the biology of *C. tetralobus*. Since other fully winged myrmecophilous ptinines are associated with arboreal ants in forests (such as *Gnostus* with *Crematogaster* and *Fabrasia* with *Camponotus*), *C. tetralobus* may also have a similar association.

#### ACKNOWLEDGMENT

My appreciation to Norman Johnson for his loan of material, review of the manuscript, and continued support. I also thank Michael Ivie, Luciana Musetti, Charles Triplehorn, and one anonymous reviewer for their comments.

#### LITERATURE CITED

- Cammaerts, R. 1974. Le système glandular tégumentaire du coléoptère myrmécophile *Claviger testaceus*. Preyssler, 1790 (Pselaphidae). Z. Morphol. der Tiere, 77: 187–219.
- Hill, W. B., R. D. Akre, and J. D. Huber. 1976. Structure of some epidermal glands in the myrmecophilous beetle *Adranes taylori* (Coleoptera: Pselaphidae). J. Kansas Entomol. Soc., 49: 367–384.
- Lawrence, J. F. and H. Reichardt. 1966. Revision of the genera *Gnostus* and *Fabrasia* (Coleoptera: Ptinidae). Psyche, 73: 30–45.
- Lawrence, J. F. and H. Reichardt. 1969. The myrmecophilous Ptinidae (Coleoptera), with a key to Australian species. Bull. Mus. Comp. Zool., 138: 1–27.
- Philips, T. K. 1997. *Cubaptinus* Zayas, a new synonym of *Fabrasia* Martinez and Viana. Coleopt. Bull., 51: 52.
- Wilson, E. O. 1971. The Insect Societies. Harvard University Press, Cambridge, Massachusetts.

*Received 24 Jul 1997; Accepted 24 Jan 1998.*